CONTENTGUARD™

eXtensible rights Markup Language (XrML)
Example Use Cases
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http://www.xrml.org/spec/2001/11/ExampleUseCases.htm

Available formats: Microsoft Word and HTML. In case of a discrepancy, the HTML is considered definitive.

NOTE: To enable interactive browsing of the XrML schemas and examples, the XrML Specification and its companion Example Use Cases document use an HTML version that leverages the XML access functionality provided by the W3C Xpath recommendation. For this reason, you need to view these HTML documents with a browser that supports that recommendation (for example, Internet Explorer Version 6.0). If your browser does not support this functionality, please view the Microsoft Word versions of those documents.

Abstract

This document provides examples of using the eXtensible rights Markup Language (XrML) to address various use cases and business models in the realm of digital rights management. XrML is a language in XML used to describe usage rights and conditions for digital content.

Status of this Document

This is a companion document to the XrML specification 2.0, available at www.xrml.org. Feedback and suggestions are welcome. Public discussion on XrML and its applications takes place on the discussion forum at http://www.xrml.org/forum.asp. Please report errors and provide comments on this document to the current editor at http://www.xrml.org/xrml_comments.asp.

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4.15 Superdistribution

This business model illustrates how to specify superdistribution of content in terms of associating the same or different sets of rights, conditions, and obligations for the superdistributed contents. In this model, the original consumer retains the rights granted to him/her, and new consumers are required to acquire the rights granted to them.

In this model, information on where rights are offered can be used to refer new users of content to acquire rights for themselves. To issue a different sets of rights, this model uses different business models for new consumers.

In the following example, the first two grants are made to a `keyHolder` named Alice for the right to `play` and `print` an eBook. The third `grant` allows anyone coming across this `license` to `issue` (super distribute) this eBook to everyone.

> **Alice can play an eBook for an up-front fee of $2.00 and she can print it, as many times as needed, for an up-front fee of $3.00. Anyone can superdistribute this eBook.**

```
<license>
    <inventory>
        <keyHolder licensePartId="Alice">
            <info>
                <dsig:KeyValue>
                    <dsig:RSAKeyValue>
                        <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>
                        <dsig:Exponent>AQABAA==</dsig:Exponent>
                    </dsig:RSAKeyValue>
                </dsig:KeyValue>
            </info>
        </keyHolder>
        <cx:digitalWork licensePartId="eBook">
            <cx:locator>
                <nonSecureIndirect URI=
                    "http://www.contentguard.com/xrmlUnleashed.spd"/>
            </cx:locator>
        </cx:digitalWork>
    </inventory>
    <grantGroup>
        <keyHolder licensePartIdRef="Alice">
        </keyHolder>
        <grant>
            <cx:play/>
            <cx:digitalWork licensePartIdRef="eBook"/>
            <sx:fee>
                <sx:paymentFlat>
                    <sx:rate currency="USD">2.00</sx:rate>
                    <sx:paymentRecord>
                        <sx:stateReference>
                            <uddi>
                                <serviceKey>
                                    <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                                </serviceKey>
                            </uddi>
                            <serviceParameters>
                                <datum>
                                    <keyHolder licensePartIdRef="Alice">
                                    </keyHolder>
                                </datum>
```

```
                        <datum>
                            <cx:digitalWork licensePartIdRef="eBook"/>
                        </datum>
                        <datum>
                            <cx:play/>
                        </datum>
                    </serviceParameters>
                </sx:stateReference>
            </sx:paymentRecord>
        </sx:paymentFlat>
        <sx:to>
            <sx:aba>
                <sx:institution>222371864</sx:institution>
                <sx:account>123457</sx:account>
            </sx:aba>
        </sx:to>
    </sx:fee>
</grant>
<grant>
    <cx:print/>
    <cx:digitalWork licensePartIdRef="eBook"/>
    <sx:fee>
        <sx:paymentFlat>
            <sx:rate currency="USD">15.00</sx:rate>
            <sx:paymentRecord>
                <sx:stateReference>
                    <uddi>
                        <serviceKey>
                            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                        </serviceKey>
                    </uddi>
                    <serviceParameters>
                        <datum>
                            <keyHolder licensePartIdRef="Alice">
                            </keyHolder>
                        </datum>
                        <datum>
                            <cx:digitalWork licensePartIdRef="eBook"/>
                        </datum>
                        <datum>
                            <cx:print/>
                        </datum>
                    </serviceParameters>
                </sx:stateReference>
            </sx:paymentRecord>
        </sx:paymentFlat>
        <sx:to>
            <sx:aba>
                <sx:institution>222371864</sx:institution>
                <sx:account>123457</sx:account>
            </sx:aba>
        </sx:to>
    </sx:fee>
</grant>
</grantGroup>
<grant>
```

```xml
<forAll varName="anyone">
</forAll>
<principal varRef="anyone"/>
<obtain/>
<grantGroup licensePartId="superdistributedGrants">
    <forAll varName="anyone">
    </forAll>
    <principal varRef="anyone"/>
    <grant>
        <cx:play/>
        <cx:digitalWork licensePartIdRef="eBook"/>
        <sx:fee>
            <sx:paymentFlat>
                <sx:rate currency="USD">2.00</sx:rate>
                <sx:paymentRecord>
                    <sx:stateReference>
                        <uddi>
                            <serviceKey>
                                <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                            </serviceKey>
                        </uddi>
                        <serviceParameters>
                            <datum>
                                <cx:play/>
                            </datum>
                            <datum>
                                <cx:digitalWork licensePartIdRef="eBook"/>
                            </datum>
                            <datum>
                                <principal varRef="anyone"/>
                            </datum>
                        </serviceParameters>
                    </sx:stateReference>
                </sx:paymentRecord>
            </sx:paymentFlat>
            <sx:to>
                <sx:aba>
                    <sx:institution>222371864</sx:institution>
                    <sx:account>123457</sx:account>
                </sx:aba>
            </sx:to>
        </sx:fee>
    </grant>
    <grant>
        <cx:print/>
        <cx:digitalWork licensePartIdRef="eBook"/>
        <sx:fee>
            <sx:paymentPerUse>
                <sx:rate currency="USD">3.00</sx:rate>
            </sx:paymentPerUse>
            <sx:to>
                <sx:aba>
                    <sx:institution>222371864</sx:institution>
                    <sx:account>123457</sx:account>
                </sx:aba>
            </sx:to>
```

```
            </sx:fee>
        </grant>
        <grant>
            <cx:extract/>
            <cx:digitalWork licensePartIdRef="eBook"/>
            <sx:fee>
                <sx:paymentFlat>
                    <sx:rate currency="USD">8.00</sx:rate>
                    <sx:paymentRecord>
                        <sx:stateReference>
                            <uddi>
                                <serviceKey>
                                    <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                                </serviceKey>
                            </uddi>
                            <serviceParameters>
                                <datum>
                                    <cx:extract/>
                                </datum>
                                <datum>
                                    <cx:digitalWork licensePartIdRef="eBook"/>
                                </datum>
                                    <datum>
                                    <principal varRef="anyone"/>
                                </datum>
                            </serviceParameters>
                        </sx:stateReference>
                    </sx:paymentRecord>
                </sx:paymentFlat>
                <sx:to>
                    <sx:aba>
                        <sx:institution>222371864</sx:institution>
                        <sx:account>123457</sx:account>
                    </sx:aba>
                </sx:to>
            </sx:fee>
        </grant>
    </grantGroup>
  </grant>
</license>
```

New consumers are to acquire the following terms and conditions: `play` for an up-front fee of $2.00, `print` for $3.00 per copy, and `extract` from the book for an up-front fee of $8.00. The `paymentFlat` construct is used to specify a one-time up-front fee; the `paymentPerUse` construct specify a payment each time a right is exercised.

Anyone can obtain the following rights: play, print and extract.

```
<grant>
   <forAll varName="anyone">
   </forAll>
   <principal varRef="anyone"/>
   <obtain/>
   <grantGroup licensePartId="superdistributedGrants">
      <forAll varName="anyone">
      </forAll>
      <principal varRef="anyone"/>
      <grant>
         <cx:play/>
         <cx:digitalWork licensePartIdRef="eBook"/>
         <sx:fee>
            <sx:paymentFlat>
               <sx:rate currency="USD">2.00</sx:rate>
               <sx:paymentRecord>
                  <sx:stateReference>
                     <uddi>
                        <serviceKey>
                           <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                        </serviceKey>
                     </uddi>
                     <serviceParameters>
                        <datum>
                           <cx:play/>
                        </datum>
                        <datum>
                           <cx:digitalWork licensePartIdRef="eBook"/>
                        </datum>
                        <datum>
                           <principal varRef="anyone"/>
                        </datum>
                     </serviceParameters>
                  </sx:stateReference>
               </sx:paymentRecord>
            </sx:paymentFlat>
            <sx:to>
               <sx:aba>
                  <sx:institution>222371864</sx:institution>
                  <sx:account>123457</sx:account>
               </sx:aba>
            </sx:to>
         </sx:fee>
      </grant>
      <grant>
         <cx:print/>
         <cx:digitalWork licensePartIdRef="eBook"/>
         <sx:fee>
            <sx:paymentPerUse>
               <sx:rate currency="USD">3.00</sx:rate>
            </sx:paymentPerUse>
            <sx:to>
               <sx:aba>
                  <sx:institution>222371864</sx:institution>
```

```
                    <sx:account>123457</sx:account>
                </sx:aba>
            </sx:to>
        </sx:fee>
    </grant>
    <grant>
        <cx:extract/>
        <cx:digitalWork licensePartIdRef="eBook"/>
        <sx:fee>
            <sx:paymentFlat>
                <sx:rate currency="USD">8.00</sx:rate>
                <sx:paymentRecord>
                    <sx:stateReference>
                        <uddi>
                            <serviceKey>
                                <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                            </serviceKey>
                        </uddi>
                        <serviceParameters>
                            <datum>
                                <cx:extract/>
                            </datum>
                            <datum>
                                <cx:digitalWork licensePartIdRef="eBook"/>
                            </datum>
                            <datum>
                                <principal varRef="anyone"/>
                            </datum>
                        </serviceParameters>
                    </sx:stateReference>
                </sx:paymentRecord>
            </sx:paymentFlat>
            <sx:to>
                <sx:aba>
                    <sx:institution>222371864</sx:institution>
                    <sx:account>123457</sx:account>
                </sx:aba>
            </sx:to>
        </sx:fee>
    </grant>
</grantGroup>
</grant>
```

4.16 Distributor Copies

This business model illustrates how to specify a maximum number of copies that a distributor can make of a work for further transmission or sale. This avoids making unnecessary, duplicated copies for distributors.

In this example, the first `license` certifies that a particular `keyHolder` is a distributor. The second `license` allows the same distributor the right to sell a content. Note that the right to sell is represented by the right to `issue` new licenses, in this context. The number of copies that can be sold is limited by an online service specified in the `exerciseLimit` condition.

A distributor can sell up to 40,000 `play` rights to a work within a year.

```
<licenseGroup>
    <license>
        <grant>
            <keyHolder>
                <info>
                    <dsig:KeyValue>
                        <dsig:RSAKeyValue>
                            <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
                            <dsig:Exponent>AQAQAA==</dsig:Exponent>
                        </dsig:RSAKeyValue>
                    </dsig:KeyValue>
                </info>
            </keyHolder>
            <possessProperty/>
            <murphy:distributor/>
        </grant>
        <issuer>
            <dsig:Signature>
                <dsig:SignedInfo>
                    <dsig:CanonicalizationMethod Algorithm=
                        "http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
                    <dsig:SignatureMethod Algorithm=
                        "http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
                    <dsig:Reference>
                        <dsig:Transforms>
                            <dsig:Transform Algorithm=
                                "http://www.xrml.org/schema/2001/11/xrml2core#license"/>
                        </dsig:Transforms>
                        <dsig:DigestMethod Algorithm=
                            "http://www.w3.org/2000/09/xmldsig#sha1"/>
                        <dsig:DigestValue>PB4QbKOQCo941tTExbj1/Q==</dsig:DigestValue>
                    </dsig:Reference>
                </dsig:SignedInfo>
                <dsig:SignatureValue>aMCJIHO2q...</dsig:SignatureValue>
                <dsig:KeyInfo>
                    <dsig:KeyValue>
                        <dsig:RSAKeyValue>
                            <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>
                            <dsig:Exponent>AQABAA==</dsig:Exponent>
                        </dsig:RSAKeyValue>
                    </dsig:KeyValue>
                </dsig:KeyInfo>
            </dsig:Signature>
```

```xml
            </issuer>
        </license>
        <license>
            <inventory>
                <keyHolder licensePartId="issuedToParty">
                    <info>
                        <dsig:KeyValue>
                            <dsig:RSAKeyValue>
                                <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
                                <dsig:Exponent>AQAQAA==</dsig:Exponent>
                            </dsig:RSAKeyValue>
                        </dsig:KeyValue>
                    </info>
                </keyHolder>
            </inventory>
            <grant>
                <forAll varName="anyone">
                </forAll>
                <keyHolder licensePartIdRef="issuedToParty">
                </keyHolder>
                <issue/>
                <grant>
                    <principal varRef="anyone"/>
                    <cx:play/>
                    <digitalResource>
                        <dsig:Reference URI=
                            "http://www.server.com/downloads/anInterestingSong.mp3">
                        <dsig:DigestMethod Algorithm=
                            "http://www.w3.org/2000/09/xmldsig#sha1"/>
                        <dsig:DigestValue>qZk+NkcGgWq6PiVxeFDCbJzQ2J0=</dsig:DigestValue>
                        </dsig:Reference>
                    </digitalResource>
                </grant>
                <allConditions>
                    <sx:exerciseLimit>
                        <sx:stateReference>
                            <uddi>
                                <serviceKey>
                                    <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
                                </serviceKey>
                            </uddi>
                        </sx:stateReference>
                    </sx:exerciseLimit>
                    <validityInterval>
                        <notBefore>2001-05-25T00:00:00</notBefore>
                        <notAfter>2002-05-25T00:00:00</notAfter>
                    </validityInterval>
                    <prerequisiteRight>
                        <keyHolder licensePartIdRef="issuedToParty">
                        </keyHolder>
                        <possessProperty/>
                        <murphy:distributor/>
                        <trustedIssuer>
                            <keyHolder>
                                <info>
                                    <dsig:KeyValue>
```

```xml
                                <dsig:RSAKeyValue>
                                    <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>
                                    <dsig:Exponent>AQABAA==</dsig:Exponent>
                                </dsig:RSAKeyValue>
                            </dsig:KeyValue>
                        </info>
                    </keyHolder>
                </trustedIssuer>
            </prerequisiteRight>
        </allConditions>
    </grant>
    <issuer>
        <dsig:Signature>
            <dsig:SignedInfo>
                <dsig:CanonicalizationMethod Algorithm=
                    "http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
                <dsig:SignatureMethod Algorithm=
                    "http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
                <dsig:Reference>
                    <dsig:Transforms>
                        <dsig:Transform Algorithm=
                            "http://www.xrml.org/schema/2001/11/xrml2core#license"/>
                    </dsig:Transforms>
                    <dsig:DigestMethod Algorithm=
                        "http://www.w3.org/2000/09/xmldsig#sha1"/>
                    <dsig:DigestValue>PB4QbKOQCo941tTExbj1/Q==</dsig:DigestValue>
                </dsig:Reference>
            </dsig:SignedInfo>
            <dsig:SignatureValue>mFdJFMcnl...</dsig:SignatureValue>
            <dsig:KeyInfo>
                <dsig:KeyValue>
                    <dsig:RSAKeyValue>
                        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
                        <dsig:Exponent>AQABAA==</dsig:Exponent>
                    </dsig:RSAKeyValue>
                </dsig:KeyValue>
            </dsig:KeyInfo>
        </dsig:Signature>
        <details>
            <timeOfIssue>2001-05-24T14:56:00</timeOfIssue>
            <validityInterval>
                <notBefore>2001-05-25T00:00:00</notBefore>
                <notAfter>2003-05-25T00:00:00</notAfter>
            </validityInterval>
        </details>
    </issuer>
    </license>
</licenseGroup>
```

4.17 Personal Copies

This business model illustrates how to specify the maximum number copies that a consumer can make of a work for personal use.

This example describes the right to `copy` a book. The lack of the right to `issue` implies that the new copies are for personal use only. The total number of copies is limited by an online service specified in the `exerciseLimit` condition.

```
A consumer may make up to 3 copies for his/her family's use.
```

```xml
<license>
    <grant>
        <keyHolder>
            <info>
                <dsig:KeyValue>
                    <dsig:RSAKeyValue>
                        <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
                        <dsig:Exponent>AQAQAA==</dsig:Exponent>
                    </dsig:RSAKeyValue>
                </dsig:KeyValue>
            </info>
        </keyHolder>
        <cx:copy/>
        <cx:digitalWork>
            <cx:description xml:lang="en">A very good book</cx:description>
            <cx:description xml:lang="fr">Un tres bon livre</cx:description>
            <cx:metadata>
                <xml>
                    <cx:simpleDigitalWorkMetadata>
                        <cx:title>A Book of James</cx:title>
                        <cx:creator>James the first</cx:creator>
                        <cx:owner>Mike the man</cx:owner>
                        <cx:copyright>Copyright 1999 Harper Collins Publishers.
                            All Rights Reserved.
                        </cx:copyright>
                    </cx:simpleDigitalWorkMetadata>
                </xml>
            </cx:metadata>
            <cx:locator>
                <cx:nonSecureIndirect URI=
                    "http://www.contentguard.com/bookOfJames.spd"/>
            </cx:locator>
        </cx:digitalWork>
        <allConditions>
            <sx:exerciseLimit>
                <sx:stateReference>
                    <uddi>
                        <serviceKey>
                            <uuid>E55129C1-74DF-40d0-B2A6-367AAAB6AB05</uuid>
                        </serviceKey>
                    </uddi>
                </sx:stateReference>
            </sx:exerciseLimit>
            <validityInterval>
```

```
            <notBefore>2001-05-25T00:00:00</notBefore>
            <notAfter>2003-05-25T00:00:00</notAfter>
         </validityInterval>
      </allConditions>
   </grant>
   <issuer>
      <dsig:Signature>
         <dsig:SignedInfo>
            <dsig:CanonicalizationMethod Algorithm=
               "http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
            <dsig:SignatureMethod Algorithm=
               "http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
            <dsig:Reference>
               <dsig:Transforms>
                  <dsig:Transform Algorithm=
                     "http://www.xrml.org/schema/2001/11/xrml2core#license"/>
               </dsig:Transforms>
               <dsig:DigestMethod Algorithm=
                  "http://www.w3.org/2000/09/xmldsig#sha1"/>
               <dsig:DigestValue>PB4QbKOQCo941tTExbj1/Q==</dsig:DigestValue>
            </dsig:Reference>
         </dsig:SignedInfo>
         <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
         <dsig:KeyInfo>
            <dsig:KeyValue>
               <dsig:RSAKeyValue>
                  <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
                  <dsig:Exponent>AQABAA==</dsig:Exponent>
               </dsig:RSAKeyValue>
            </dsig:KeyValue>
         </dsig:KeyInfo>
      </dsig:Signature>
      <details>
         <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
      </details>
   </issuer>
</license>
```